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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,256	07/11/2003	Byung-in Ma	1293.1863	2425

49455 7590 12/01/2006

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EXAMINER	
GOMA, TAWFIK A	

ART UNIT	PAPER NUMBER
2627	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,256	MA ET AL.	
	Examiner	Art Unit	
	Tawfik Goma	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to the amendment filed on 9/21/2006.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation that the path in which the beam crosses the track is substantially perpendicular to the track is not disclosed in the specification. In fact, Figure 6, and paragraph 33 of the specification disclose that the path is not perpendicular to the track because the disc is rotating.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Ma et al (EP Publication 1085509 A2) in view of Eastman (US 5646919).

Regarding claim 1, Ma discloses a method of detecting a radial tilt of a disc (col. 9 lines 51-57), the method comprising: comparing phases of first summed signals obtained from a first plurality of signals that are generated when first light-receiving units of a photo diode receive light from a laser beam that is reflected from a surface of the disc to generate a first phase comparison signal (figs. 13-15 and col. 16 lines 7-10); comparing phases of second summed signals obtained from a second plurality of signals that are generated when second light-receiving units of the photo diode receive light from the laser beam that is reflected from the surface of the disc to generate second phase comparison signal (figs. 8-10 and col. 15 lines 17-23); and detecting the radial tilt based on a phase difference of second and first phase comparison signals obtained (col. 17 lines 34-54 and 453, fig. 17). Ma fails to disclose wherein the signals are obtained when a laser beam crosses a track on a disc. In the same field of endeavor, Eastman discloses a dynamic tracking control device for an optical disc, wherein the error signal is detected while a laser beam crosses a track on a disc (fig. 6). Eastman further discloses that the error signal is used to eliminate tilt error (col. 3 lines 16-19). It would have been obvious to one of ordinary skill in the art to modify the optical pickup apparatus disclosed by Ma, by detecting the error signal as the beam crosses the track as taught by Eastman. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to detect the tilt error signal as the beam crosses the track in order to have the error signal be more accurate with respect to changing conditions of the track (see Eastman col. 3 lines 19-23)

Regarding claim 2, Ma discloses wherein the detecting of the radial tilt comprises reading a level value of the second phase comparison signal when a level value of the first phase comparison signal is substantially zero (col. 17 lines 34-54). Ma discloses that each light portion of the photo-detector detects a signal separately and that a phase comparison on the inner areas is performed as well as a phase comparison on the outer areas. As a result, the phase comparison of the outer areas, which determines a radial tilt error signal, does not affect the detection performed on the inner areas, which also performs a radial tilt error signal, in the case where the phase comparison of the outer areas is zero. Finally, since Ma discloses subtracting the phase comparison signals and using the result as the tilt error signal, it is clear that the error signal would correspond to the value of the first or second phase signal when the other is 0.

Regarding claim 3, Ma discloses wherein the detecting of the radial tilt comprises multiplying the read value by a proportional constant (155, fig. 19).

Regarding claim 4, Ma discloses wherein the second and first light-receiving units are substantially rectangular(A2, B2, C2, D2, fig. 5), two sides of light-receiving surfaces of the second light-receiving units and two sides of light-receiving surfaces of the first light-receiving units disposed in a track direction of the disc are substantially identical, and the other two sides of the light-receiving surfaces of the first light-receiving units disposed to be substantially perpendicular to the track direction of the disc are longer than the other two sides of the light-receiving surfaces of the second

light-receiving units disposed to be substantially perpendicular to the track direction of the disc (fig. 5).

Regarding claim 5, Ma discloses wherein the second plurality of signals that second light-receiving units receive to generate the second phase comparison signal are portions of -1^{st} order and 1^{st} order beams of light (col. 10 lines 40-45).

Regarding claim 6, Ma discloses wherein the first plurality of signals the first light-receiving units receive to generate the first phase comparison signal are a 0^{th} order beam of light and one of -1^{st} order and 1^{st} order beams of light (col. 10 lines 54-58).

Apparatus claims 7-12 are drawn to the apparatus corresponding to the method of using same as claimed in claims 1-6. Therefore, apparatus claims 7-12 correspond to method claims 1-6, and are rejected for the same reasons of obviousness as applied above.

Claims 7-12 have limitations similar to those treated in the above rejection(s), and are met by the references as discussed above. Claim 7 however recites the following limitations an octant photo-diode (fig. 1 and fig. 5).

Regarding claims 13 and 14, Ma discloses a disc drive apparatus to drive and control tilt of a disc, comprising: a drive unit to rotate the disc (col. 1 lines 11-14); a pickup unit in which an octant photo diode is mounted (fig. 5); a tilt detector unit (see claims 1 and 7 above). Ma fails to disclose a focusing and seek servo control system to move a laser beam spot to a target track on the disc; a rotating servo control system to control the rotation of the disc; and a tracking servo control system to move the laser

beam spot to follow the target track during the rotation of the disc. Ma discloses that the tilt detection unit disclosed is used an optical recording/reproducing apparatus, but fails to describe the features of the apparatus as claimed. However, in the same field of endeavor, Eastman discloses an optical recording/reproducing apparatus with error correction that includes a focus control (17, FA, fig. 1) and tracking control system (17, TA, fig. 1) and a rotating control servo (col. 6 lines 63-65). It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Eastman by providing a tilt detection device as disclosed by Ma. The rationale is as follows: One of ordinary skill in the art would incorporate the tilt detector taught by Ma in an apparatus with focus, tracking, and disc rotation control in order to perform recording/reproducing functions properly.

Further in regard to claim 14, Ma discloses a disc recording/reproducing apparatus, comprising: at least one of a recording part to record data on a disc and a reproducing part to reproduce data that had been recorded on a disc (col. 6 lines 19-22). It is inherent that the apparatus is mounted in a fixture in order to be functional as a recording/reproducing apparatus. It is also inherent that there is a path that transmits the signal to the recording/reproducing part.

Regarding claim 15, claim 15 is rejected for the same reasons as claim 1 above.

Regarding claim 16, claim 16 is rejected for the same reasons as claim 1 above.

Regarding claim 17, Ma discloses a computer readable medium encoded with processing instructions implementing a method of detecting a radial tilt of a disc (col.

33 lines 37-45). Ma in view of Eastman disclose everything regarding the tilt detection method as in claim 1 above.

Regarding claim 18, claim 18 is rejected for the same reasons as claim 2 above.

Regarding claim 19, Ma discloses wherein the method of detecting the radial tilt comprises multiplying the read value by a proportional constant (451, fig. 17).

Regarding claim 21, Eastman further discloses wherein a path through which the laser beam crosses the track is substantially perpendicular to the track (fig. 6). Figure 6 shows where the path (Arrow direction) is substantially perpendicular to the track at position B due to the wobbling of the groove.

Claims 1 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Ma (EP Publication 1085509 A2) in view of Nakamura et al (US 6167009).

Regarding claims 1 and 20, Ma discloses everything regarding the tilt detection method as applied above. Ma fails to disclose wherein the tilt is detected when a spot crosses a track. In the same field of endeavor, Nakamura discloses detecting a tilt when a spot crosses a track (figs 19a-19c). It would have been obvious to one of ordinary skill in the art to modify the detection method disclosed by Ma in order to detect the tilt when a spot crosses a track as taught by Nakamura. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to detect a tilt when a spot crosses a track in order to adapt the error signal to the changing conditions of a track.

Regarding claim 20, Nakamura further discloses performing tilt detection without tracking control (col. 13 lines 31-36) in order to move the spot across a track.

Regarding claim 21, Nakamura further discloses wherein the path of the laser beam crosses the track in a substantially perpendicular direction (figs. 19a-19c).

Response to Arguments

Applicant's arguments with respect to claims 1-19 have been fully considered but they are not persuasive. Regarding applicant's argument that the movement of the spot from positions A-C in figure 6 is not crossing of a track is not persuasive because the position of light spot A is on the right side of the track as shown in figure 6 and it moves through position B to position C where it is on the left side of the track which is clearly crossing the track. The spot movement is also not only for generating a tracking signal, but also for tilt detection as disclosed by Eastman (col. 3 lines 16-19).

Regarding applicant's argument that the travel path of the beam in Eastman is not in a radial direction and that the beam travel path has a longitudinal component, this argument is not persuasive for at least the reason that the limitation is not presented in the claim. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, the track path of Eastman does have a radial component since position A is disposed on an inner side (right) of a groove centerline and position C is disposed on an outer side (left) of the groove centerline.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tawfik Goma whose telephone number is (571) 272-4206. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T. Goma
11/27/2006

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